DESCRIPTION AND MINIMUM REQUIREMENTS FOR PREQUALIFICATION
May 2006

The Illinois Department of Transportation prequalifies engineering/architectural consultants in 50 categories of service. This is accomplished by interested firms submitting a Statement of Experience and Financial Condition (SEFC) to the Department in duplicate.

These descriptions and minimum requirements for prequalification supplement the SEFC and are to be used as a guide in determining areas of specialization for which firms may wish to apply for prequalification. A listing of the 50 categories is located on page 7 of the SEFC booklet. Categories, which require a questionnaire, are also indicated on page 7. The questionnaires must be completed to be considered for prequalification in those categories. Consultants, prime and/or subconsultants, must be prequalified in the category of work the firm is performing.

Where the minimum requirements indicate Illinois licensing or registration, that individual must be a full-time employee who has acted in a leadership role on pertinent projects. A full-time employee is defined as one who works for a firm 35 or more hours/week, 52 weeks/year. Part-time staff members, special consultants, subconsultants, committed or pledging individuals, or persons on retainers cannot be used to meet the minimum requirements for prequalification, except as allowed in Section E. The experience of these licensed or registered individuals must be relevant to the category of transportation work and the work must have been performed within the last five years, except for the categories of Structures and Environmental Reports, where the last ten years will be considered.

Prequalification is based on the firm experience and on the individual experience. A firm can hire an individual with experience and if there is sufficient support staff the firm can become prequalified in a category. The Firm's support staff of engineers and/or technicians must have pertinent experience or training. The lack of relevant experience or training of the support staff may result in denial of prequalification.

Firms must be specific in listing all experience which qualifies them for prequalification in each category. Details must be provided in the personnel experience data (page 6) and in the firm's experience data (page 8) of the Statement of Experience and Financial Condition.

It is possible that some or all of the staff or project information firms provide in one section may be used again in one or more of the Specialty Questionnaires. Since certain sections of the SEFC are reviewed by various IDOT departments and staff, please provide all of the information requested in each area, in the questionnaire format provided; do not use references to another section containing detailed information in the interest of brevity.

Firms requesting prequalification in any area of specialization will, at the Department's discretion, be required to send documentation of their past work and/or to give a presentation to the Department outlining past experience, capabilities of current staff and how they would accomplish a project if selected. The Department will, at its discretion, make on-site visits to the consultant's office to verify the information set forth in the SEFC document submitted by a firm.

The description of the work involved in the areas of specialization and the minimum requirements are as follows:

A. PREPARATION OF PLANS, SPECIAL PROVISIONS AND ESTIMATES

1. Highways

   a. Freeways

      Freeways consists of engineering services necessary for and the preparation of plans, special provisions and estimate of cost for controlled access highways. Previous experience in the design of controlled access highways or satisfactory work in the design of "Roads and Streets" with complex geometric design details is required for a prequalification rating in this category. Minimum personnel requirements are one Illinois Licensed Professional Engineer and support staff.

   b. Roads and Streets

      Roads and Streets consists of engineering services necessary for and the preparation of plans, special provisions and estimate of cost for arterial and collector and local roads and streets. Previous experience in the design of "Roads and Streets" or related experiences such as the design of city streets or subdivision drives, etc., are a prerequisite for a rating in this category. Minimum personnel requirements are one Illinois Licensed Professional Engineer and support staff.

2. Airports

   Airports consists of engineering services and studies necessary for development of the air-side facilities of airports (runways, taxiways, aprons, lighting systems, etc.). Land-side facilities (roads, parking lots, terminal buildings, etc.) are not considered for prequalification in Airports.

   The following phases are considered for Airports prequalification:

   a. Airport Planning and Special Services

      (1) Airport Layout Plan / Master Plan
      (2) Environmental Assessment
      (3) Noise Studies (FAR Part 150)

   b. Airport Design

      (1) Airport Design (Plans and Specifications) - airfield pavements and simple electrical
      (2) Airport Electrical Design (Plans and Specifications) - specialized NAVAIDs, vault work, complex electrical
      (3) Previous work for Airports is required for a prequalification rating in this category.
      (4) Minimum personnel requirements are one Illinois Licensed Professional Engineer experienced in one or more phases of airport work.

c. Airport Construction Inspection

(1) Airport Construction (Resident Engineering) - airfield pavements and simple electrical
(2) Airport Electrical (Resident Engineering) - specialized NAVAIDs, vault work, complex electrical
(3) Materials - Testing and Mix Designs
(4) Previous work for Airports is required for a prequalification rating in this category.
(5) Minimum personnel requirements are one Illinois Licensed Professional Engineer experienced in one or more phases of airport work.

Local airport sponsors (airport authorities, counties, municipalities, etc), in cooperation with the Division of Aeronautics, perform selection and assignment of consultants for airport work.

3. Structures

Structures consist of engineering services required for the estimate of cost, planning, design, and preparation of plans and special provisions for bridges and structures. The firm must demonstrate staff experience in directly completing these functions for the requested category in order to become prequalified. Following are general descriptions of each structural category and the minimum requirements to prequalify in each.

a. Highway Bridges

(1) Simple
Description: Multiple cell box culverts, single span bridges, deck beam bridges, deck scarification with overlay and minor repairs on continuous span structures.

The minimum requirements for prequalification in this category are:
(a) An Illinois Licensed Structural Engineer with experience at the simple level
(b) A support staff of one or more engineers with a degree in civil engineering and structural design experience

(2) Typical
Description: Basic multiple span bridges in seismic category-A, single span bridges in seismic category-B, re-decking of multiple span bridges, basic retaining walls and widening of basic multiple span bridges.

The minimum requirements for prequalification in this category are:

(a) An Illinois Licensed Structural Engineer with experience at the typical level
(b) A support staff of engineers with degrees in civil engineering and bridge design experience
(c) Adequate computer support equipment and software
(d) Firms qualifying for this category will be required to have staff experience in successfully completing the design and contract plan

development for a minimum of three bridge structures listed in this category, new multi-span structure designs of various types are preferred

(3) Advanced Typical

Description: Multiple span bridges in seismic category-B, single span bridges in seismic category-C, simple curved or flared structures and tall retaining walls requiring advanced analysis or non-standard support requirements.

The minimum requirements for prequalification in this category are:

(a) An Illinois Licensed Structural Engineer with experience at the advanced typical level

(b) A support staff of engineers with degrees in civil engineering and design experience at the advanced typical level

(c) Adequate computer support equipment and software

(d) Firms qualifying for this category will be required to have staff experience in successfully completing the design and contract plan development for curved steel girder structures and at least two additional advance typical designs, preferably covering two of the following three categories: continuous multiple span seismic category-B bridge structures, flared girder bridge structures and tall retaining walls requiring advanced analysis or non-standard support requirements

(4) Complex

Description: Complex curved girders, concrete and steel box girders, multiple span bridges in seismic category-C, bridges or walls that require unique foundation treatment, expressway bridges with complex framing plans due to geometry requirements such as on/off ramps and major bridge rehabilitation of main structural components.

The minimum requirements for prequalification in this category are:

(a) An Illinois Licensed Structural Engineer with experience at the complex level

(b) An adequate support staff of engineers with degrees in civil engineering and design experience at the complex level

(c) Adequate computer support equipment and software

(d) Firms qualifying for this category will be required to have broad staff experience in successfully completing the design and contract plan development for three of the bridge structure types listed in this category

b. Railroad Bridges:

Description: Temporary or permanent railroad bridges.

The minimum requirements for prequalification in this category are:

(a) An Illinois Licensed Structural Engineer with railroad bridge experience and a support staff of engineers with civil engineering degrees

(b) Or an Illinois Licensed Structural Engineer with highway bridge experience at the “typical” level and a support staff of licensed professional civil engineers with railroad bridge experience

(c) Firms qualifying for this category will be required to have staff experience in successfully completing the design and contract plan development for three bridges listed in this category

c. Movable Bridges:
Description: Bascule, swing and lift type bridges.

The minimum requirements for prequalification in this category are:
(a) An Illinois Licensed Structural Engineer with movable bridge experience
(b) A support staff of engineers with movable bridge experience
(c) Adequate computer support equipment and software
(d) Firms qualifying for this category will be required to have staff experience in successfully completing the design and contract plan development for three bridges listed in this category

d. Major Bridges:
(1) Steel Girder (I-Section, Box and Orthotropic)
(2) Tied Arch
(3) Segmental Concrete Box Girder
(4) Continuous/Cantilever Truss
(5) Cable Stay Girders

Description: Typically, these structures have spans greater than 350' and require special analysis and design.

The minimum requirements for prequalification in this category are:
(a) An Illinois Licensed Structural Engineer with "major bridge" experience in the structure type specified and an adequate support staff of engineers with civil engineering degrees and "major bridge" experience in the structure type specified
(b) Or an Illinois Licensed Structural Engineer with "complex-highway bridges" experience and an adequate support staff of licensed professional engineers with "major bridge" experience in the structure type specified
(c) Adequate computer support equipment and software

Structural staff requirements for consideration toward firm prequalification:

- All staff considered toward a firms prequalification level must be full-time employees of the firm being reviewed. A full-time employee is defined as one who works for a firm 35 or more hours/week, 52 weeks/year with a primary focus on structural engineering. Part-time staff members, committed employees, special consultants or individuals "on call" will not be considered.

- Work experience by current staff on projects for agencies other than IDOT or completed while an employee for another firm is acceptable.

- Work performed by subconsultants will not be considered.

- Projects completed to a significant degree by employees who are no longer full-time employees of the firm will not be considered.

- Only staff members anticipated to work on future IDOT projects shall be considered.

4. Special Plans

a. Traffic Signals

This work consists of engineering services necessary for the design of traffic signal systems, including preparation of plans, special provisions and cost estimates. Previous experience in the design of traffic signals is required for a prequalification rating in this category. Minimum personnel required is one Illinois Licensed Professional Engineer who understands the state-of-the-art of modern traffic signal systems, including knowledge of traffic signal hardware, traffic control equipment, vehicle detectors, traffic signal control strategy, and communication equipment. Consultant statements should provide some indication as to the complexity of the firm's traffic signal or design experience.

b. Lighting

This work consists of the design of roadway and associated lighting systems. The ability to complete lighting design by the firm’s in-house staff must be demonstrated. The following types of lighting design experience is desirable.

- Continuous Freeway Lighting,
- Complete Interchange Lighting,
- Partial Interchange Lighting,
- Major Urban Arterial Lighting, Streetscape Lighting,
- Tunnel Lighting, Bridge Lighting,
- Overhead Sign Lighting,
- Underpass/Overpass Lighting,
- Highmast Tower Lighting,
- And other lighting systems as required

The minimum personnel requirements are one individual with a minimum of 5 years of lighting design experience in the applicable categories listed above. In addition to design experience in roadway lighting systems, the individual should have a thorough knowledge of the department’s lighting policies and procedures (see Bureau of Design and Environment Manual Chapter 56). This person may be an Illinois Licensed Professional Engineer and/or a graduate electrical engineer.

This individual must also possess electrical design experience or a second individual with these qualifications must be on staff. For electrical design experience, the individual will as a minimum, be knowledgeable in all aspects of lighting circuit design and the proper application of the National Electrical Code (NEC).

These individuals shall be personally involved and directly responsible for the lighting system design. This shall include design calculations and final plan review. Computer capabilities shall include the necessary software and

supporting equipment to design and draft lighting plans to the department's standards.

c. Pumping Stations

This work consists of engineering services required for and the preparation of plans, special provisions and estimate of cost of pumping stations including pumps, motors, controls and buildings. Minimum personnel requirements are one or more Illinois Licensed Professional Engineers with training and experience in hydrology, hydraulics, electrical and mechanical engineering and an Illinois Licensed Structural Engineer.

B. SPECIAL STUDIES

This work consists of comprehensive studies of all factors and an evaluation of alternatives for the following:

1. Location Drainage – The scope of work includes hydrologic/hydraulic analyses for highway drainage facilities. This work consists of the design of ditches, storm sewers, storage pipes with restrictors, and detention basins, which also includes hydraulic gradeline analyses, storage routing, inlet spacing and energy dissipation design.

   The minimum requirements for prequalification in this category are:

   a. At least one full-time Illinois Licensed Professional Engineer with a minimum of five years of hydraulic modeling experience including a thorough knowledge of the Department drainage policies and procedures, the permit rules of the Office of Water Resources (IDNR) and Illinois drainage laws.

   b. At least one full-time staff engineer with a minimum of three years of hydraulic computer modeling experience.

   c. Drainage knowledge and/or experience which can be demonstrated by prior satisfactory work performance for IDOT or one or more engineering staff members who have completed training in NHI (National Highway Institute) or equivalent hydraulic courses in the following topics: highway hydrology, open channel flow, culvert hydraulics, storage routing/detention basin design, inlet spacing and storm drain design.

   d. A minimum of two staff engineers, in addition to b. above, with experience in highway hydraulics and hydrology are needed to accomplish the scope of work.

   e. Adequate computer support equipment and software to design and draft highway drainage facilities.

2. Traffic - Traffic Studies consist of engineering services required to monitor and analyze the characteristics of motor vehicle or pedestrian traffic on and near roadways. This includes a wide variety of studies including, but is not limited to, the following:
   (a) Motor vehicle traffic counts,
   (b) Pedestrian traffic counts,

(c) Motor vehicle classification counts/studies,
(d) Speed studies,
(e) Traffic performance measures,
(f) MUTCD warrant studies,
(g) Signal timing plans,
(h) Signalization in conjunction with intersection design studies and accident studies,
(I) Human behavior/reaction studies,
(j) Vehicle emissions and fuel consumption studies, and
(k) Benefit-cost analyses of proposed signal improvements.

The minimum requirements for prequalification in this category are one full-time Illinois Licensed Professional Engineer with demonstrated traffic study work experience and a support staff.

3. Signal Coordination and Timing (SCAT) - These studies include traffic data analysis, and running and interpreting computer programs for determining optimum traffic signal timing to optimize traffic flow on arterial and street networks.

   The minimum requirements for prequalification in this category are: (a) a full-time Illinois Licensed Professional Engineer with demonstrated SCAT work experience (b) adequate support equipment and software and (c) support staff. [SCAT work experience must include an understanding of traffic signal systems - hardware, control strategies and communications, experience with capacity and signal optimization software programs, and experience in traffic signal controller operation (including the ability to implement timings into controllers).]

4. Safety - Safety Studies include a thorough analysis and evaluation of the cause(s) of accidents and a recommendation of appropriate/effective counter-measures to eliminate them or reduce their frequency and severity.

   The minimum requirements for prequalification in this category are one full-time Illinois Licensed Professional Engineer with demonstrated experience in conducting Safety Studies, and support staff.

5. Feasibility - Feasibility Studies identify whether or not a proposal is worthy of additional detailed engineering studies. These studies include a general engineering study with an overview of potential environmental impacts.

   The minimum requirements for prequalification in this category are one full-time Illinois Licensed Professional Engineer with demonstrated experience in conducting Feasibility Studies and support staff.

C. LOCATION/DESIGN STUDIES

Location/Design Studies involve the development, evaluation, and documentation of engineering alternatives which when combined with the Environmental Report will result in the selection of the alignment and design features with the best combination of social, economic, environmental, and engineering effects. The Location/Design and Environmental Reports must be developed simultaneously to assure proper cross-coordination of findings and objectives. Each Location/Design Report must describe the alternates considered and the reasons for selecting the recommended alternate. The description should include essential elements such as appropriate design standards, traffic

volumes, typical cross-section, access control features, vertical and horizontal alignment, right-of-way requirements, intersection designs, general structure requirements, and an estimate of cost. The Report must include appropriate maps and drawings, a list of policy exceptions (and supporting reasons), a summary of views received from coordination and public involvement, and a description of the proposal's effects on adjacent roads and streets. The sub-categories listed below represent three different levels of complexity for Location/Design Reports.

1. Rehabilitation

   This involves development and evaluation of alternatives appropriate for rehabilitation of existing highways. It will include more than minor work including geometric changes, bridge improvements, pavement rehabilitation, safety investigations, drainage analysis, and establishment of safety clear zones. It may include minor right-of-way acquisition throughout the project length.

   Minimum personnel requirements are one Illinois Licensed Professional Engineer and appropriate support staff. Geometric design, drainage, and public involvement expertise are required.

2. Reconstruction/Major Rehabilitation

   This involves development and evaluation of alternatives appropriate for reconstruction or a major rehabilitation of an existing highway. A project will basically follow the existing alignment but may replace more than 50% of the existing pavement due to adjustments in horizontal or vertical alignment. It may include significant geometric changes, additional through lanes, bridge improvements or replacement, major intersection/interchange design, drainage analysis, and safety investigation. Public involvement will also be an integral part of the project. Significant amounts of additional right-of-way may be required. Minimum personnel requirements are an Illinois Licensed Professional Engineer and staff with expertise in geometrics, hydraulics, public involvement, and report writing. The project manager must have an Illinois Professional Engineer's license and prior managerial experience with two or more Rehabilitation projects or one Reconstruction/Major Rehabilitation project. Other appropriate support staff is also required.

3. New Construction/Major Reconstruction

   This involves development and evaluation of alternatives appropriate for a new highway on new location and/or major reconstruction of an existing highway for which one alternate may be a totally new location. The entire range of expertise necessary to totally develop and design a new highway will be required. This will include establishment of horizontal and vertical alignment, intersection/interchange design, and development of a drainage plan including sizing structures. Other related expertise will be required including field surveying, public relations, estimating, earthwork calculations, and traffic capacity analysis. All new or significant amounts of additional right-of-way will be required throughout the project. Minimum personnel requirements are one Illinois Licensed Professional Engineer, one Illinois Licensed Structural Engineer and additional staff with expertise in geometrics, hydraulics, estimating, traffic analysis, public involvement, and report writing. The project manager must be an Illinois Licensed Professional Engineer and have prior managerial experience with two or more Reconstruction/Major Rehabilitation projects

or one New Construction/Major Reconstruction project. Other appropriate support staff is also required.

D. HYDRAULIC REPORTS

1. Waterway

a. Typical

The scope of work includes hydrologic/hydraulic analysis for culverts, bridges, and multiple opening floodplain encroachments. Also, included are pressure flow, over the road flow, scour evaluations, sediment transport and stream stability design.

The Consultant must be able to implement hydrologic techniques including USGS regression equations and stream gage analysis.

The minimum requirements for prequalification in this category are:

(1) At least one full time Illinois Licensed Professional Engineer with a minimum of five years of hydraulic modeling experience including a thorough knowledge of the Department drainage policies and procedures, permit rules of the Office of Water Resources (IDNR) and Illinois drainage laws.

(2) At least one full time staff engineer with a minimum of three years hydraulic computer modeling experience.

(3) Hydraulic knowledge and/or experience which can be demonstrated by prior satisfactory work performance for IDOT or one or more engineering staff members who have completed training in NHI (National Highway Institute) or equivalent hydraulic courses in the following topics: highway hydrology, culvert design, stream stability and scour at highway bridges, and HEC-2, HEC-RAS, or WSPRO.

(4) A minimum of two staff engineers, in addition to (2), with experience in highway hydraulics and hydrology are needed to accomplish the scope of work.

(5) Adequate computer support equipment and software including, but not limited to, HEC-2, HEC RAS, and WSPRO.

b. Complex

Complex bridges include the items listed in the scope of work for typical bridges as well as more advanced hydrologic modeling methodologies such as HEC-1, HEC-HMS, and TR-20. The Consultant must also be able to perform a critical storm duration analysis using Bulletin 70 rainfall data and must have the ability to perform reservoir/storage routing analyses and floodplain management studies.

In addition to the requirements above, the Consultant should have the computer support equipment to implement the hydrologic techniques of HEC-1, HEC-HMS, and TR-20 and there should be at least one staff member who has completed NHI training in HEC-1, or equivalent.

2. Pump Station

The scope of work includes hydrologic/hydraulic analysis for a pump station. The work also includes pressure flow, hydraulic jumps and energy dissipation design, reservoir/ storage routing, inlet spacing, storm sewers, hydraulic gradeline analysis, weir and orifice design.

If discharges are not available, the Consultant must be able to implement hydrologic techniques such as HEC-1 and TR-20 to develop inflow hydrographs and must be able to perform a critical storm duration analysis using Bulletin 70 rainfall data.

The minimum requirements for prequalification in this category are:

a. At least one full time Illinois Licensed Professional Engineer with a minimum of five years hydraulic modeling experience including a thorough knowledge of the Department drainage policies and procedures, the permit rules of the Office of Water Resources (IDNR) and Illinois drainage laws.

b. At least one full time staff engineer with a minimum of three years of hydraulic computer modeling experience.

c. Hydraulic knowledge and/or experience which can be demonstrated by prior satisfactory work performance for IDOT or one or more engineering staff members who have completed training in NHI (National Highway Institute) or equivalent hydraulic courses in the following topics: urban hydrology (including TR-20 or HEC-1), storage routing/detention basin design, inlet spacing and storm drain design, and pump station design.

d. A minimum of two staff engineers, in addition to b. above, with experience in highway hydraulics and hydrology are needed to accomplish the scope of work.

e. Adequate computer support equipment and software including, but not limited to, HEC-1, HEC-2, HEC HMS, HEC RAS, TR-20, HYDRAIN and WSPRO.

E. ENVIRONMENTAL REPORTS

The preparation of Environmental Reports is conducted simultaneously with the preparation of Location/Design Studies. The two actions must be carefully coordinated to assure the complete range of environmental and engineering issues are included in the decision-making process. The preparation of Environmental Reports will include all investigations and studies necessary to identify potential adverse impacts of proposed projects, evaluation of the likely significance of those impacts, and recommendations for mitigation actions which will reduce the severity of identified adverse impacts. Regulations require that an Environmental Assessment or an Environmental Impact Statement be prepared for a Federally-assisted or regulated project, unless the project is categorically excluded from such requirements.

From past experience, the Department can generally predict what level of documentation will be required. There are two categories that represent the levels of complexity of environmental reports.

1. Environmental Assessment (EA)

This involves projects that are expected to have involvement with one or more of the following special environmental issue areas: agriculture lands, wetlands; floodplains; sensitive biological resources (e.g., threatened or endangered species, nature preserves, or natural areas); cultural resources (archaeological and historical resources and historic structures); proposed Wild and Scenic Rivers; Section 4(f) lands; and other sensitive environmental resources of public concern. More than one technical environmental study is expected to be necessary. The overall result is expected to be the preparation of an Environmental Assessment resulting in a Finding of No Significant Impact or substantial studies and documentation in accordance with Environmental Class of Action Determination (ECAD) procedures. (Refer to BDE Manual, Section 23-2.)

Minimum personnel requirements at the EA level are:

a. A qualified Environmental Lead who meets one of the following criteria:

   (1) Is a full-time employee of the firm who has supervised the preparation of two or more NEPA transportation related Environmental Assessments or one or more NEPA transportation related Environmental Impact Statements within the last ten years; or

   (2) Is a full-time employee of the firm who has supervised the preparation of one highway transportation-related Environmental Assessment or Environmental Impact Statement within the last ten years.

b. All environmental disciplines (Noise, Water, Socio-Economics and Ecology), together with Public Involvement and Technical Writing, must be assigned to qualified persons with not more than three environmental disciplines assigned to any one individual. Qualified subconsultants may be assigned for all of the environmental disciplines listed above and must be identified by firm and individual.

In addition, the firm must have completed a transportation-related Environmental Assessment or a Draft Environmental Impact Statement (DEIS) in the last ten years. Projects with completed Environmental Assessments or Draft Environmental Impact Statements, approved for circulation, may be used to fulfill minimum Environmental Lead or Firm project requirements.

2. Environmental Impact Statement (EIS)

This includes major transportation-related developments which will involve a large amount of demolition, a large number of displacements, or substantial disruption to local traffic patterns resulting in significant impacts to one or more of the special environmental issue in the following areas: agriculture lands, wetlands; floodplains; sensitive biological resources (e.g., threatened or endangered species, nature preserves, or natural areas); cultural resources (archaeological and historical resources and historic structures); proposed Wild and Scenic Rivers; Section 4(f) lands; and other sensitive environmental resources of public concern. A number of technical environmental studies are expected to be necessary resulting in the identification of significant adverse impacts and suitable mitigation measures and the preparation of an Environmental Impact Statement.

Minimum personnel requirements at the EIS level are:

a. A qualified Environmental Lead who is a full-time employee of the firm and who has supervised the preparation of one or more highway-related Environmental Impact Statements or two or more highway-related Environmental Assessments, within the last ten years.

b. All environmental disciplines (Noise, Water, Socio-Economics and Ecology), together with Public Involvement and Technical Writing, must be assigned to qualified persons with not more than three environmental disciplines assigned to any one individual. At the EIS level, at least two environmental disciplines must be assigned to sufficiently qualified, full-time employees of the firm other than the Environmental Lead. Qualified subconsultants may be assigned for the two remaining environmental disciplines listed above and must be identified by firm and individual.

In addition, the firm must have completed one or more highway-related Environmental Impact Statements or two or more highway-related Environmental Assessments, in the last ten years. Projects with completed Environmental Assessments or Draft Environmental Impact Statements, approved for circulation, may be used to fulfill minimum Environmental Lead or Firm project requirements.

F. SPECIAL TRANSPORTATION STUDIES

1. Mass Transit

Mass Transit work consists of the planning and design of operating systems for the effective movement of people. This includes sociological studies, corridor and terminal design and vehicle selection. Experience in the design of rail or mass transportation is required for prequalification. Minimum personnel requirements are one Illinois Licensed Professional Engineer and support staff.

2. Railway Engineering

This consists of the inspection, evaluation, design, and cost/quantity estimation of existing or potential railway track and structures. The firm is required to have experience in the design, construction, and rehabilitation of track for prequalification. Minimum personnel requirements are; one Illinois Licensed Professional Engineer with Class I Railroad carrier engineering experience in design, construction and rehabilitation of mainline railroad track and all necessary support staff.

G. SPECIAL SERVICES

1. Route Survey

This consists of measurements, calculations and field work necessary to establish line and grade for a specific transportation improvement. Route Survey also includes topographic surveys. Minimum personnel requirements are one Illinois Licensed Professional Land Surveyor or one Illinois Licensed Professional Engineer and support staff.

2. Land Survey

This consists of determining boundaries, writing descriptions of specific parcels of land and the installation and restoration of monuments. Minimum personnel requirements are one Illinois Licensed Professional Land Surveyor and support staff.

3. Aerial Mapping

This consists of taking and developing photographs suitable for mapping and planning studies and the development of precise topographic maps and surveys based upon information obtained from the aerial photography. Minimum requirements are one Illinois Licensed Professional Engineer or Professional Land Surveyor or a Certified Photogrammetrist and support staff.

4. Geotechnical Engineering

a. Typical

This consists of soil and rock sampling in a prescribed manner at various locations and depths, classifying, and field and/or laboratory testing for characterizing the physical, mechanical and engineering properties of soil or rock. When applicable, a detailed foundation or soils report will be required for the design of structure foundations or transportation facilities. The report should meet or exceed the minimum requirements of the most current IDOT Geotechnical Manual.

Minimum requirements are one Illinois Licensed Professional Engineer or Structural Engineer with demonstrated experience in geotechnical engineering and appropriate support staff. Individuals directly in charge of field sampling and testing should have a minimum of 3 years of relevant experience in geotechnical field/laboratory operations. Consultants may obtain the services of contract drillers and use private laboratories.

The firm's or the firm's subconsultant's most recent tour of the (main/satellite laboratory) AASHTO Materials Reference Laboratory (AMRL) must have inspection results for the following:

TEST	AASHTO STANDARD
Unconfined Compression	AASHTO T 208
Consolidation	AASHTO T 216
UU triaxial compression	AASHTO T 296
CU triaxial compression	AASHTO T 297

If the results indicated corrective action was required, evidence must be provided through purchase receipts of new equipment or other means, of any corrective action taken to bring the test(s) into compliance with the AASHTO Standard(s).

b. Complex

In addition to the requirements of 4.a above, the Consultant should provide sufficient evidence of knowledge and demonstrated experience on complex geotechnical projects requiring feasibility studies and innovative solutions. Examples include, but are not limited to, deep loose sand formations in seismic areas (liquefaction studies), failure analyses and repairs (forensic studies), etc. The individual directly in charge of complex geotechnical projects should be an Illinois Licensed Professional Engineer or Licensed Structural Engineer and have a minimum of 10 years of experience in similar projects.

5. Electrical Engineering

This consists of the design of electrical components of transportation facilities. Minimum personnel requirements are one Illinois Licensed Professional Engineer with training and experience in electrical engineering.

6. Mechanical Engineering

This consists of the design of mechanical components of transportation facilities. Minimum requirements are one Illinois Licensed Professional Engineer with training and experience in mechanical engineering.

7. Sanitary Engineering

This consists of the analysis of various waste material and the design and application of storm water and waste disposal facilities to handle and dispose of such. Minimum requirements are one Illinois Licensed Professional Engineer with training and experience in sanitary engineering.

8. Architecture

This consists of the design and preparation of plans, special provisions and estimate of cost for the construction of transportation related buildings. Minimum personnel requirements are one Illinois Licensed Architect and support staff.

9. Landscape Architecture

This consists of the preparation of plans, special provisions and estimate of cost for aesthetically pleasing landscape features. Minimum personnel requirements for prequalification are one Illinois Registered Landscape Architect or Illinois Licensed Professional Engineer with training and experience in landscape architecture and support staff.

10. Hazardous Waste

These services will entail investigations, studies, and designs for potential hazardous waste sites. A variety of sites may be investigated (i.e., old, abandoned, or improperly closed dumps, chemical manufacturing sites, metal plating/fabricating sites, dry cleaning/service stations, storage sites and buildings, and structures containing potential contamination). Additional work may include conducting surveys and testing of stored materials, tank contents, and containers to determine whether hazardous waste or materials are present.

Provisions for laboratory and field testing including geophysical methods will be required for a wide variety of hazardous and non-hazardous wastes including but not limited to: water quality parameters, poly-chlorinated biphenyls (PCBs), pesticides, heavy metals, organics, and radioactive wastes.

Evaluation, summarizations, and reporting on preliminary site investigations, petroleum-related leaking underground storage tanks (LUSTs), asbestos assessments, laboratory analysis, and remedial designs, as well as construction oversight activities may be included as an important part of this work.

For a firm to be prequalified in this area of specialization, the following minimum firm experience, staffing requirements, and equipment/support services must be fully met:

a. Minimum firm experience requires the successful completion as the prime consultant of the following:

(1) ten or more of the following: Risk Assessment (RA), Remedial Design (RD), Remedial Construction (RC), Remedial Investigation (RI)/Feasibility Study (FS), RCRA Corrective Action (RCA), Remedial Construction Oversight (RCO), Site Remediation Program (SRP), and Leaking Underground Storage Tanks (LUSTs). The ten **(10)** Hazardous Waste Site Investigations shall include at least one (1) RI/FS, one (1) RCO, one (1) RD, one (1) RCA, two (2) SRP (under 35 Illinois Administrative Code (IAC) 740 and at least one (1) using 35 IAC 742 Tier 2 or 3 analysis), and two (2) LUSTs (using 35 IAC 742 Tier 2 or 3 analysis) All project activities must have been completed within the last ten (10) years.

b. Minimum staff requirements include the following of which one individual must be an Illinois Licensed Professional Engineer and one individual must be an Illinois Licensed Professional Geologist:

(1) Administrative/Managerial Staff (Responsible for day-to-day supervision of work assignments, efficient utilization of resources, and client satisfaction)

Two or more individuals, each with five or more years of direct experience in the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 as amended by the Superfund Amendments and Reauthorization Act of 1986 (CERCLA/SARA), Remedial Investigation/Feasibility Studies (RI/FS's), Resource Conseration and Recovery Act (RCRA) Facility Inspections (RFI's), RCRA Corrective Action (RCA), Remedial Designs (RD's) and Remedial Construction

Oversight (RCO's), Site Remediation Program (SRP), and petroleum-related Leaking Underground Storage Tank (LUST) cleanups.

(2) Technical/Professional Staff (Responsible for providing technical direction for the project(s), and effective management of technical support staff, project schedule(s), and budget(s))

(a) Two or more individuals, each with five or more years of direct experience in CERCLA/SARA, RI/FS's, RFI's, RD, RCO, SRP, and petroleum-related LUST cleanups in Illinois.

(b) Two or more individuals, each with four or more years of direct experience in CERCLA/SARA, RCA, RDs and RCO's.

(c) Two or more individuals, each with three or more years of experience in sampling/measurement activities at hazardous/special waste sites.

c. Minimum equipment/support services includes the following:

(1) Personal protection equipment (levels D, C and B) to conduct investigations and remediations.

(2) Physical/chemical/geophysical measurement and sampling equipment to conduct investigations and remediations.

(3) In-house capability or established working relationships with physical, geophysical, and environmental testing laboratory and drilling companies to conduct investigations and remediations. The environmental laboratory(ies) must be accredited by IEPA under 35 Illinois Administrative Code 186.

11. Asbestos Abatement Surveys

Services are required to perform asbestos surveys of buildings requiring demolition. This work will include review of existing data, a building survey, asbestos sampling and analysis and preparation of a report summarizing the location and description of the identified asbestos, quantities, and a preliminary estimate of abatement costs.

For a firm to be prequalified in this area of specialization, the following minimum firm experience, staffing requirements, and equipment/support services must be fully met:

a. Minimum firm experience requires the successful completion as the prime consultant of ten or more asbestos abatement surveys in the last five years.

b. Minimum staff requirements include the following of which one individual must be an Illinois Licensed Professional Engineer or Architect:

(1) Administrative/Managerial Staff (Responsible for day-to-day supervision of work assignments, efficient utilization of resources, and client satisfaction)

One or more individuals, each with five or more years of direct experience in conducting Asbestos Abatement Surveys.

(2) Technical/Professional Staff (Responsible for providing technical direction for the project(s), and effective management of technical support staff, project schedule(s), and budget(s))

Two or more individuals, each with five or more years of direct experience in Asbestos Abatement Surveys. These individuals must also be licensed by the Illinois Department of Public Health (IDPH).

c. Minimum equipment/support services includes in-house capability or established working relationship with a laboratory accredited by the American Industrial Hygiene Association (AIHA) to conduct asbestos analyses.

12. Construction Inspection

Construction Inspection work consists of staking, material testing and inspection, documentation of materials and quantities, record keeping and enforcement of specifications applicable to a Contractor's work on construction projects. As a prerequisite for a Construction Inspection prequalification rating a Consultant must have an in-house full-time employee who has experience in the position of Resident Engineer, or equivalent experience, in construction work under IDOT specifications and has a working knowledge of IDOT specifications and procedures.

In addition to the above mentioned individual, the Consultant must also have one or more in-house full-time employees meeting each of the following requirements:

a) Personnel who have a working knowledge of IDOT specifications and documentation procedures for the inspection of work and successful completion of the IDOT class S-14, Documentation of Contract Quantities.

b) Trained technicians who have experience and a working knowledge in the area of Hot Mixed Asphalt (HMA), Portland Cement Concrete (PCC), and Soils testing. All personnel performing materials field testing for PCC (air, slump, making strength specimens, sampling, and temperature) and HMA (density and temperature) shall have successfully completed the appropriate QC/QA trained technician classes. Personnel performing field testing for Soils (density) shall have completed IDOT class S-33, Geotechnical Testing and Field Inspection, formerly known as “Standard Earth Density.”

c) An experienced survey party chief with adequate survey equipment.

The Consultant shall have IDOT approved testing equipment for PCC, HMA, Aggregates, and Soils according to the “Manual of Test Procedures for Materials.” For PCC, HMA, and Aggregate laboratory testing. The Consultant must have experience with Quality Assurance Testing, Laboratory and Equipment. This category also provides information for using portable PCC labs.

13. Quality Assurance Testing

a. Services

A quality assurance plan following the "Quality Assurance/Quality Control Guidelines for Work by Consulting Engineers" is required. Services include managing the Quality Assurance (QA) requirements for Hot Mix Asphalt (HMA) and Portland Cement Concrete (PCC) Quality Control/Quality Assurance (QC/QA) projects according to the Standard Specifications for Road and Bridge Construction and any applicable contract special provisions.

Services also include coordination of QA activities with the Contractor and the Engineer, QA field and lab tests, inspection of the Contractor's QC activities, reporting of results and investigations of tests when required by the contract.

b. Personnel Requirements

Minimum personnel requirements include a qualified project manager who shall be an Illinois Licensed Professional Engineer and who shall manage the required QA activities and tests. Qualified personnel must have successfully completed the Department's QC/QA and Specific Task Training Program classes specified in the SEFC Questionnaire for Quality Assurance Testing Consultants.

c. Laboratory and Equipment

The Consultant shall have an IDOT approved PCC/Aggregate, HMA/Aggregate, or PCC/HMA/Aggregate laboratory as indicated in the advertisements for offers of interest for professional services. The laboratory and equipment shall be approved according to the current Bureau of Materials and Physical Research (BMPR) Policy Memorandum, "Minimum Private Laboratory Requirements for Construction Materials Testing or Mix Design." Additional information regarding use of portable PCC labs and their approval is provided in Department Policy MAT-15, "Quality Assurance Procedures for Construction."

The laboratory indicated in the advertisement for offers of interest for professional services shall be accredited according to the AASHTO Accreditation Program (AAP) for procedures specified in the BMPR Policy Memorandum, "Minimum Private Laboratory Requirements for Construction Materials Testing or Mix Design."

The consultant shall also have IDOT-approved testing equipment for PCC and HMA field tests according to the "Manual of Test Procedures for Materials." PCC field testing includes air, slump, making strength specimens, sampling, and temperature. HMA field testing includes density and temperature.

14. Bituminous Mix Designs

a. Services

Services include performing Hot Mix Asphalt (HMA) mix designs and / or mix design verification on an on-call basis for the Department. All work shall be according to the project specifications, the Manual of Test Procedures for Materials, and the QC/QA Level III Mix Design class.

Projects may include Superpave designs, SMA designs, high friction surfaces such as Mix E and F designs, and forensic mix evaluations.

b. Personnel Requirements

Project Manager – An Illinois Licensed Professional Engineer with demonstrated experience in project and materials management.

Project Mix Designer – (May be the Project Manager) – The mix designer must have successfully completed the QC/QA Level III Mix Design class, and the Superpave upgrade class (if the original class preceded the inclusion of Superpave). Five year's experience is recommended.

Lab Technicians (minimum 2) – Personnel directly in charge of sampling and testing should have a minimum of 3 year's of relevant experience in bituminous mix designs.

c. Laboratory and Equipment Requirements

The Consultant must have an HMA laboratory and equipment that conforms to the requirements of the current Bureau of Materials and Physical Research Policy Memorandum, "Minimum Private Laboratory Requirements for Construction Material Testing or Mix Design." The lab shall be approved by IDOT for all tests indicated under "HMA Design."

15. Subsurface Utility Engineering

This consists of locating existing above and underground utilities within proposed transportation projects and reporting how the utilities will be impacted by the project. The projects will involve research, field investigations, test holes, plotting design analysis and reporting recommendations relative to impacts on existing or proposed utilities. The Consultant must be able to complete the following four levels of subsurface utility engineering:

Level A: Precise horizontal and vertical location of utilities obtained by the actual exposure and subsequent measurement of surface utilities, usually at a specific point. Minimally intrusive excavation equipment is typically used to minimize the potential for utility damage. A precise horizontal and vertical location, as well as other utility attributes, is shown on plan documents. Accuracy is typically set to 15-mm vertical and to applicable horizontal survey and mapping accuracy as defined or expected by the project owner.

Level B: Information obtained through the application of appropriate surface geophysical methods to determine the existence and approximate horizontal position of subsurface utilities. Quality level B data should be reproducible by surface geophysics at any point of their depiction. This information is surveyed to applicable tolerances defined by the project and reduced onto plan documents.

Level C: Information obtained by surveying and plotting visible above-ground utility features and by using professional judgment in correlating this information to quality Level D information.

Level D: Information derived form existing records or oral recollections.

The Consultant is also required to have the following:

a. Experience in researching the location of utilities, above and underground.

b. Knowledge of the equipment/techniques necessary to locate the utilities.

   (1) Surface geophysical techniques, such as, electromagnetic, magnetic, sonic, etc.

   (2) Excavation by use of test holes using vacuum excavation or comparable non-destructive equipment.

c. The ability to determine the extent the proposed roadway improvement impacts the existing utilities.

d. The ability to provide staff and equipment for simultaneous projects at different locations.

e. A project manager and project engineer who have adequate experience in managing subsurface underground engineering projects.

f. One Illinois Licensed Professional Engineer and support staff.